

Public Health Levels for PCBs in Indoor School Air

The U.S. EPA has calculated prudent public health levels that maintain PCB exposures below the “reference dose” – the amount of PCB exposure that EPA does not believe will cause harm. EPA’s reference dose (RfD) is 20 ng PCB/kg body weight per day. Indoor air levels are based upon EPA’s understanding of average exposure to PCBs from all other major sources, and were calculated for all ages of children from toddlers in day-care to adolescents in high school as well as for adult school employees.

In calculating these indoor air levels, EPA considered potential sources of PCB exposure from both school and non-school environments. Non-school sources of PCB exposure include both indoor and outdoor air, indoor dust, outside soils, and diet. Although the concentrations of PCBs in environmental media are not well characterized, mean or median values from the scientific literature, and average contact rates, were used to estimate exposure. For non-school sources, the largest single source of PCB exposure for most individuals in uncontaminated buildings is diet, which contributes roughly 50 to 60% to total PCB exposure. Typical indoor and outdoor air contains a small amount of PCBs, and inhalation exposure accounts for another 25 to 35% of total exposure. Together, these non-school sources of PCBs generally result in exposures that are significantly below the reference dose. In addition, it is worth noting that the PCB concentrations in food have been decreasing and this trend would further decrease exposure.

School sources of PCBs that were considered include school indoor and outdoor air, indoor dust, and nearby outside soils. In calculating these public health levels for indoor air in schools, EPA assumed that the PCB concentrations in dusts and soils in and around schools were the same as in average homes or other buildings without elevated PCBs. EPA also assumed an 8-hour school day for adults and children less than 3 years old, and a 6.5 hour school for all other children. EPA also assumed children would be in school 180 days per year. Using estimates of exposure for sources except indoor air in schools, EPA calculated the school indoor air PCB concentration that would result in a total exposure equal to the reference dose. These calculated indoor air concentrations are the air concentration values provided in the table below.

EPA recommends that the concentrations of PCBs in indoor air be kept as low as is reasonably achievable and that total PCB exposure be kept below the reference dose level. The concentration values provided in the table below are based upon average situations. Spending less time in schools would decrease school exposure and cause the values to be higher. Spending more time in schools would have the opposite effect and would decrease the values. PCB concentrations in outdoor soils, indoor dusts, or indoor surfaces greater than those in background, non-school environments would suggest that exposure sources other than air in schools increase total exposure and, therefore, would decrease these air concentration values.

Building owners and school administrators wishing to make similar calculations based on their own specific circumstances should contact their regional PCB coordinator.

Public Health Levels of PCBs in School Indoor Air (ng/m³)

Assuming a background scenario of no significant PCB contamination in building materials and average exposure from other sources, these concentrations should keep total exposure below the reference dose of 20 ng PCB/kg-day.

Age 1-<2 yr	Age 2-<3 yr	Age 3-<6 yr	Age 6-<12 yr Elementary School	Age 12-<15 yr Middle School	Age 15-<19 yr High School	Age 19+ yr Adult
70	70	100	300	450	600	450